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10/797,719	03/10/2004	Toshimitsu Hirai	9319S-000729	4111

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EXAMINER	
TADAYYON ESLAMI, TABASSOM	
ART UNIT	PAPER NUMBER
1792	
MAIL DATE	DELIVERY MODE
05/14/2009	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/797,719	HIRAI ET AL.	
	Examiner	Art Unit	
	TABASSOM TADAYYON ESLAMI	1792	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *23 January 2009*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-9* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-9* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claim 1 is rejected under 35 U.S.C. 102(b) as being anticipated by Alfred I-Tsung Pan (U. S. Patent: 6501663, here after Pan).

Pan teaches,

A pattern forming method of forming film patterns (3-D interconnect system) [abstract lines 1] by arranging droplets of a liquid material on a substrate [abstract lines 3-6], comprising: defining a plurality of pattern forming areas arranged with a pitch which is larger than that of the discharge portions[fig. 21], in which the film patterns are to be formed, on the substrate [153, 155 and 157 in fig. 15] the areas including: a first pattern forming area in which the film pattern is to be formed from a side thereof [153 in fig. 15] and a second pattern forming area in which a film pattern is to be formed from the center thereof [155 in fig. 15]; and arranging the droplets the first pattern forming area at the side thereof and arranging the droplets in the second pattern forming area at the center thereof to form the film patterns, the droplets are contacting each others and the droplets arranged in the first and second pattern areas entirely formed of a same material(conductive ink) and wherein the discharge portions are provided corresponding to the first and second pattern areas, and the droplets are arranged while moving the

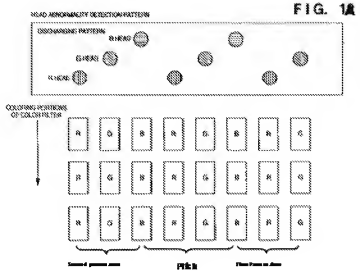
discharge portions in the direction in which the pattern forming areas are arranged[fig. 15, column 10 lines 11-16].

Claims 1-2, 4-6 are rejected under 35 U.S.C. 102(b) as being anticipated by Makoto Akahira et al, (U. S. Patent: 6145981, here after 981).

Claim 1 is rejected. 981 teaches a method of making linear film pattern by arranging droplets of a liquid discharged from a plurality of discharged portions on a substrate [fig. 12A] comprising; defining a plurality of pattern forming areas arranged with a pitch which is larger than that of the discharge portions [fig. 12A], in which the film the film pattern are to be formed on the substrate the areas including;

a first pattern forming area in which a film pattern is to be formed from a side thereof(G); and a second pattern forming area in which a film pattern is to be formed from the center thereof(G)[fig. 12A], and wherein the discharge portions are provided corresponding to the first and second pattern forming areas, and the droplets are arranged while moving the discharge portion in the direction in which the pattern forming area are arranged. The droplets arranged in the first pattern forming area and the droplets arranged in the second pattern forming area are entirely formed of a same material(red green and blue ink).

FIG. 1A



Although 981 doesn't clearly teaches the droplets touch each others in each side of the first pattern forming are and the center of the second pattern forming area, but it is inherent that the droplets must touch(or overlap) to create a uniform film, it is also shown in fig. 15-fig. 18, that the droplets are touching each other to create the film.

Claim 2 is rejected. 981 teaches the limitation of claim 1as discussed above and it is inherent that the droplets in the first and second pattern simultaneously arranged in forming areas (G).

Claim 4 is rejected. 981 teaches the limitation of claim 1 and 981 further teaches in first pattern forming area, the side is first formed(G) and then center formed(R), and

in the second pattern forming area, the center portion is first formed(G) and then the side is formed(R)[fig. 12A].

Claim 5 is rejected. 981 teaches the limitation of claim 1 and 981 further teaches, a plurality of discharge portions for arranging the droplets are provided corresponding to the first and second pattern forming areas, and the droplets are arranged while

moving the discharge portions in the direction in which the pattern forming areas are arranged [printing the color lines along the proposed line].

Claim 6 is rejected. 981 teaches the limitation of claim 1 and 981 further teaches; a step of forming one side of a first film pattern to be formed in the first pattern forming area (B), a step of forming a central portion of a second film pattern to be formed I the second pattern forming area at the same time as forming the other of the first film pattern(G), and a step of forming one of one side and the other side of the second film pattern at the same time as forming central portion of the first film pattern (R)[fig. 12A].

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 3, is rejected under 35 U.S.C. 103(a) as being unpatentable over by Makoto Akahira et al, (U. S. Patent: 6145981, here after 981).

Claim 3 is rejected. 981 teaches the limitation of claim 1 as discussed above. Although 918 teaches arranging the droplets in first and second areas simultaneously, but in general splitting of one step into two, where the processes are substantially identical or equivalent in terms of function, manner and result was held to be not patentable distinguished the processes. *Ex parte Rubin, 128 USPQ 440(Bd. Pat. App. 1959).* Therefore it would have been obvious to one of ordinary skill in the art at the time of invention was made to have a method the pattern forming method that 981 teaches where the droplets is only arranged in one of the first and second pattern forming areas, because the result of the process is the same as printing the line simultaneously.

3. Claims 7, and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Alfred I-Tsung Pan (U. S. Patent: 6501663, here after Pan), further in view of S. Nakamura et al (U. S. Patent Application: 2003/0184613, here after 613).

Claim 7 is rejected. Pan teaches,

A pattern forming method of forming film patterns (3-D interconnect system) [abstract lines 1] by arranging droplets of a liquid material on a substrate [abstract lines 3-6], comprising: defining a plurality of pattern forming areas arranged with a pitch which is larger than that of the discharge portions[fig. 21], in which the film patterns are to be formed, on the substrate [153, 155 and 157 in fig. 15] the areas including: a first pattern forming area in which the film pattern is to be formed from a side thereof [153 in fig. 15] and a second pattern forming area in which a film pattern is to be formed from the center thereof [155 in fig. 15]; a first step of forming a first area (155) of a first film pattern (153+155, fig. 15) of the plurality of film patterns (153+155+157, fig. 15); a

second step of forming a first area (157, half of the line) of a second film pattern (157) and forming a second area of the first film pattern (153, half of the line); and a third step of forming a second area of the second film pattern (157, the other half part) and forming a third area of the first film pattern (153, the other half)[fig. 15]. Pan does not specifically teaches forming the first area of the second pattern and second area of the first pattern happens simultaneously as well as forming the second area of the second film pattern and third area of the first pattern. 613 teaches a pattern forming method of forming film patterns by arranging droplets of a liquid material on a substrate (printing with an ink jet printer) [abstract lines 1-3], where the plurality of the lines are print simultaneously [fig. 52]. Therefore it would have been obvious to one of ordinary skill in the art at the time of invention was made to have a method of manufacturing a device comprises patterns according to what Pan teaches where the step of printing lines 153 and 157 happens simultaneously as 613 teaches, because it helps to save the time in printing process. the droplets are contacting each others and the droplets arranged in the first and second pattern areas entirely formed of a same material(conductive ink) and wherein the discharge portions are provided corresponding to the first and second pattern areas, and the droplets are arranged while moving the discharge portions in the direction in which the pattern forming areas are arranged[fig. 15, column 10 lines 11-16].

Claim 9 is rejected. Pan and 613 teach the limitation of claim 7 as discussed above and Pan further teaches the liquid material comprises conductive particles [column 10 lines 11-15, lines 49-52].

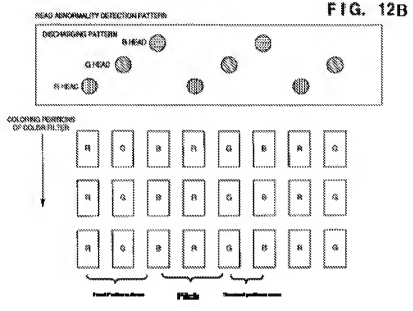
Claims 7- 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Alfred I-Tsung Pan (U. S. Patent: 6501663, here after Pan), further in view of Makoto Akahira et al, (U. S. Patent: 6145981, here after 981).

Claim 7 is rejected. Pan teaches the limitation of claim 1; Pan does not specifically teaches forming the first area of the second pattern and second area of the first pattern happens simultaneously as well as forming the second area of the second film pattern and third area of the first pattern.

A pattern forming method of forming linear film patterns by arranging droplets of a liquid material discharging from a plurality of discharge portions on a substrate [abstract, also fig. 12B (below)], the method comprising, when a plurality of the film patterns are arranged with a pitch is larger which is larger than of the discharge portions and formed on the substrate [fig. 12B]: a first step of a first pattern forming area in which a film pattern is to be formed from a side thereof; and a second pattern forming area in which a film pattern is to be formed from the center thereof[fig. 12B]. Forming a first area (mark on fig. 12B) of a first film pattern of the plurality of film patterns (R); a second step of forming a first area of a second film pattern (G) at the same time as forming a second area of the first film pattern; and a third step of forming a second area of the second film pattern (B) at the same time as forming a third area of the first film pattern [fig. 12]. 981 also teaches the polarity of nozzles (304 fig. 52C) ejects the ink to print specific pattern area (color) on the surface. 981 teaches the discharge portions are provided corresponding to the first and second pattern forming areas, and the droplets are arranged while moving the discharge portion in the direction in which the pattern

forming area are arranged[printing the color lines along the proposed line]. Therefore it would have been obvious to one of ordinary skill in the art at the time of invention was made to have a pattern formed taught by Pan where the droplets are formed by the method taught by 981, because 981 teaches a suitable method of applying ink to a substrate by droplets.

FIG. 12B



Claim 8 is rejected. Pan and 981 teaches the limitation of claim 7 as discussed above. Although 918 teaches arranging the droplets in first and second areas simultaneously, but in general splitting of one step into two, where the processes are substantially identical or equivalent in terms of function, manner and result was held to

be not patentable distinguished the processes. *Ex parte Rubin, 128 USPQ 440(Bd. Pat. App. 1959).* Therefore it would have been obvious to one of ordinary skill in the art at the time of invention was made to have a method the pattern forming method that 981 teaches where only the red line in the first area is first printed (separately) and then (second step), green lines are printed simultaneously. In the next step (third step), the blue lines are printed simultaneously in both first and second areas. In the four step a single red line is printed as the third area of the second pattern, first in first pattern area and then in the second pattern are (not simultaneously), because the result of the process is the same as printing the green line simultaneously in both areas.

Claim 9 is rejected. Pan and 981 teach the limitation of claim 7 as discussed above and Pan further teaches the liquid material comprises conductive particles [column 10 lines 11-15, lines 49-52].

Response to Arguments

4. Applicant's arguments, see Remarks, filed 01/23/09, with respect to 35 U.S.C. 112, first paragraph rejection have been fully considered and are persuasive after amending the claims. The 35 U.S.C. 112, first paragraph rejection of claims 1-9, 12-13 has been withdrawn.

Applicant's arguments filed 01/23/09 have been fully considered but they are not persuasive. The applicant argues in claim 1 rejection the droplets are not entirely from the same material. The examiner disagrees, the droplets in first pattern forming area are blue, red and green ink in which are the same material in the second pattern forming area as well. The applicant also argues for claims 7 the droplets are not from the same

material in first, second and third steps. The examiner aggresses, as Pan teaches the ink is conductive.

Conclusion

5. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tabassom T Tadayyon-Eslami whose telephone number is 571-270-1885. The examiner can normally be reached on 7:30-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Cleveland can be reached on 571-272-1418. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Tabassom T. Tadayyon-Eslami/
Examiner, Art Unit 1792

/Michael Cleveland/

Supervisory Patent Examiner, Art Unit 1792